

REMARKS

This Amendment is in response to the Office Action dated March 22, 1999, the deadline to which has been extended by two (2) months from June 22, 1999 to August 22, 1999, by petition and payment of fee. Claims 1-29 are pending in the present application. Claims 1, 11, 14, 16, 18, 21, and 28 have been amended, and claims 30 and 31 have been added to more particular claim the subject matter of the present invention. Claims 1-31 remain pending. The Commissioner is hereby authorized to charge the amount of \$96.00 to Deposit Account 02-2120 (Sawyer & Associates) for payment of excess claims fees. The Commissioner is further authorized to charge any additional fees to Deposit Account 02-2120 (Sawyer & Associates)

Claims 14-20, 21-27, and 28-29 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claims 14, 16, 18, 21 and 28 have been amended to provide correct antecedent basis. Claims 14, 16, and 18 have been amended to recite mode-specific items, rather than “menu-specific” items. Claim 21 has been amended to recite a “digital imaging device”, rather than a “digital camera”. And claim 28 has been amended to change “fourth set of elements to “fourth element”, and to delete references to navigating “the second element using the second set of navigation buttons”.

The present invention is directed to method and apparatus for integrating a digital camera user interface across multiple operating modes. A disadvantage of conventional cameras is that the operation of user interface is non-intuitive, especially for the novice user. The user interface is non-intuitive because the operation of the user interface across different modes and/or navigation screens is inconsistent. Accessing most features in the two mode camera described above, for instance, requires that the user press the keys of the interface in a certain sequence. Each of these key sequences may be different depending on which play-mode navigation screen

is displayed, the navigation screen showing individual images or the navigation screen showing arrays of images. Thus, this type of user interface requires that the user memorize a different key sequence for each navigation screen before being able to effectively operate the camera.

A further disadvantage of conventional digital-camera user-interfaces is that the camera is capable of displaying only the images themselves, or a combination of an image and its image number. The user interface is either incapable of delivering further information regarding displayed images and the camera features, or accessing such information requires the user to enter another non-intuitive and complicated key sequence. Complicating matters is the fact a digital camera is a hand-held device that has an extremely small display and no conventional input devices, such a keyboard or mouse.

According to the present invention, a user may navigate through and access the contents and features of a multiple-mode digital camera using a consistent and intuitive user interface. Example operating modes include a capture mode, a review mode, and a menu mode, all of which have a similar look and feel and are operated in the same manner. In each operating mode, a set of mode-specific items are displayed that are aligned to the orientation of one set of navigational buttons and the user can scroll through the items using that set of navigational buttons. For an active mode-specific item, additional information is displayed in a direction offset from the items in a direction aligned with the second set of navigational buttons. In a preferred embodiment, the user interface across each operating mode can be described as a user controlled horizontal interaction following by a reply from the camera of a vertical display of information. Because the user interacts with the camera in each of various camera modes using the hardware buttons in a similar manner, the learnability and usability of the camera are enhanced.

As shown in Figure 9, in review mode the camera allows a user to play-back captured images. A set of thumbnail images is displayed that are aligned to the orientation of one set of control buttons that a user can scroll through using that set of control buttons. For a currently active image, a larger view of the image is provided in the display along with additional information about the image. As described, the additional information includes the media types associated with the image, the name or number of the image, and time and date of capture.

As shown in Figure 10, in menu mode a set of menu categories is displayed that are aligned to the orientation of one set of control buttons that a user can scroll through using that set of control buttons. For a currently active menu category, a list of menu items is displayed in the orientation of the second set of control buttons.

And as shown in Figure 11, in capture mode a status screen allows the user to control the settings of the camera. A set of icons is displayed that is aligned to the orientation of one set of control buttons that a user can scroll through using that set of control buttons. For a currently active icon, additional information is displayed beneath the set of icons.

In a preferred embodiment, modes of navigating the display and the display of information on the camera are mapped to the orientation of a four-way navigation control button. Consequently, the user essentially only has to learn one major mechanism for interacting with the multiple modes of the digital camera. That is, since the user interface interacts with each of the camera modes using only the four-way controller, the integrated user interface of the present invention significantly reduces the amount of key sequences the user must memorize in order to operate the camera.

Independent claims 1, 11, and 21 have been amended to recite that when a user holds down the first set of navigation buttons, the mode-specific items are scrolled-off the display and

replaced by new mode-specific items.

Claims 30 and 31 have been added to more particularly point out and distinctly claim the subject matter of the invention. Claim 30, which is dependent on claim 8, recites the step of displaying the following information along with an image in review mode; one or more media types, a name, and a capture date and time for the active image, wherein the media types include a still image, a time lapse image, a burst image, and sound.

Independent Claim 31 has been added to particularly claim each operating mode and the user interface thereof. Claim 31 recites:

A method for integrating a user interface across multiple operating modes of a digital camera, the digital camera including a display, and a navigational device including first and second buttons for controlling the display, the first button having a first orientation and the second button having a second orientation, the method comprising the steps of:

- a) *providing the digital camera with a first mode for capturing images;*
- b) *providing the digital camera with a second mode for displaying a set of menu categories on the display by*
 - i) *displaying the set of menu categories aligned to the orientation of the first button,*
 - ii) *scrolling from one menu category to the next in response to a user pressing the first button, wherein the display indicates which of the menu categories is a currently active menu category, wherein when a user holds down the first button, the menu categories are scrolled-off the display and replaced by new menu categories, and*
 - iii) *displaying additional information corresponding to the currently active menu category in the display in a location that is offset from the menu categories in a direction of orientation corresponding to that of the second button; and*
- c) *providing the digital camera with a third mode for playing back captured images on the display by*
 - i) *displaying a set of thumbnail images aligned to the orientation of the first button,*
 - ii) *scrolling from one thumbnail image to the next in response to a user pressing the first button, wherein the display indicates which of the thumbnail images is a currently active thumbnail image, wherein when a user holds down the first button, the thumbnail images are scrolled-off the display and replaced by new thumbnail images, and*
 - iii) *displaying additional information corresponding to the currently active thumbnail image in the display in a location that is offset from the thumbnail images in a direction of orientation corresponding to that of the*

second button, wherein operation of the third mode is consistent with operation of the second mode to thereby increase ease of use of the digital camera.

Accordingly, it is believed claims 14-20, 21-27, and 28-29 particularly point out and distinctly claim the subject matter of the invention and are in compliance with 35 U.S.C. §112.

The Examiner rejected claims 1-10, 11-19, 21-23 and 25-27 under 35 U.S.C. §103(a) as obvious over Japanese Patent No. JP8-223,524 issued to Matsumoto in view of U.S. Pat. No. 5,513,306 issued to Mills et al. Claim 20 is rejected under 35 U.S.C. §103(a) as being unpatentable over Matsumoto and Mills, and further in view of Isoguchi et al. (U.S. 5,146,353). Claim 24 is rejected under 35 U.S.C. §103(a) as being unpatentable over Matsumoto and Mills, and further in view of Matsumoto et al. (U.S. 5,796,428). Claims 28-29 are rejected under 35 U.S.C. §103(a) as being unpatentable over Matsumoto and Mills, and Isoguchi.

Matsumoto is directed to a portable video camera equipped with playback and editing functions. Matsumoto's display screen displays frames of video stored in a memory, a memory indicator (202) showing used storage space (205) and unused storage space (206), a frame pointer (203) showing a current frame's position within the memory, a cursor (201), and a play/back/editing instruction mark (208) for receiving instruction on a change in the operation conditions of the video camera (pgs 23-24). Matsumoto's camera also includes a cursor control button (111) for moving the cursor.

It is respectfully submitted that Matsumoto fails to render the claimed features of the present invention obvious for a variety of reasons. First, Applicants could find no teaching in Matsumoto regarding "scrolling from one mode-specific item to the next." It is submitted that neither the cursor or the frame pointer teach this function.

With respect to the cursor, Matsumoto teaches that the user changes the operation

conditions of the video camera by choosing displayed instructions with the cursor (presumably using the cursor control button 111). Thus, Matsumoto teaches no more than the use of a conventional PC-type cursor for selecting functions on a display in which a user is free to move the cursor in every direction about the display. This in no way teaches or suggests the “scrolling from one mode-specific item to the next” that are “aligned” to the orientation of a set of buttons, as recited in claim 1. The use of a cursor also fails to teach the added recitation of “when a user holds down the first control button, the mode-specific items are scrolled-off the display and replaced by new mode-specific items”. In Matsumoto, all function indicators that a user may change are static and do not move about the display.

With respect to the frame pointer (203), Matsumoto teaches that it moves across the memory indicator to show the current frame’s position within the memory. The memory indicator is not an “aligned set of mode-specific items” that the user can “scroll” from one to the next. And Matsumoto does not teach or suggest that holding down the cursor navigation button 111 would have any effect on the memory indicator or the frame pointer, whereas in claim 1, doing so causes the mode-specific items to be scrolled off the display and replaced by new ones.

Furthermore, Matsumoto teaches a camera that includes multiple operating modes, but the user interface of the operating modes is not integrated as claimed in the present invention. For example, Matsumoto’s capture screen shown in Figure 5c, does not work the same way as the multi-play screen of 6a. In the present invention in contrast, at least two of operating modes includes “a user controlled horizontal interaction” followed by a vertical response by the digital imaging device,” as recited in claim 21.

The Examiner stated that

Matsumoto ‘524 does not explicitly show the step of displaying additional information ...[sic] corresponding to the current active item in the

display in a location that is offset from the active item in a direction of orientation corresponding to that of the second button, and scrolling though the list of information items by pressing the second button. However, the above mentioned claimed limitations are well-known in the art as evidenced by Mills.

Applicant respectfully disagrees. It is well settled that Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching suggestion, or incentive supporting the combination. ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577 (Fed. Cir. 1984).

Mills is directed to a PC-based video editing system. It is submitted that one skilled in the art, who was attempting to solve usability problems in a hand-held device would not have any incentive or motivation to look for solutions to the problem in the art of PC-base video editing. This is because the user interfaces of such systems are inapplicable to digital cameras due to the size of the display and the fact that digital cameras do not include traditional input devices, such as a keyboard and mouse. Mills discloses the display of a file menu, but due to the size of a PC monitor, the menu can also be displayed simultaneously with all sorts of video playback and editing information.

In the absence of any teaching or suggestion to the contrary, it is believed the combination of the references is a result a improper hindsight, and cannot be used to establish obviousness.

Assuming, however, that Matsumoto and Mills were combined, it is submitted the combination would still fail to solve the problem that the present invention overcomes; inconsistent operation of multiple camera modes. A combination of Matsumoto and Mills would not result in much more than is what is taught in Matsumoto. The combination would result in the video camera of Matsumoto that includes several

operating modes in which Mill's file menu is displayed in addition to Matsumoto's a cursor and memory bar. The display would be so cluttered as to be illegible. Furthermore, the video camera would still fail to have at least two modes in which "operation of [one] mode is consistent with operation of the second mode to thereby increase ease of use of the digital camera", as recited in claim 31.

With respect to claims 28 and 29, it is respectfully submitted that a combination of Matsumoto, Mills, and Isoguchi fail to render the present invention obvious because the combination fails to teach or suggest the cooperation of elements as claimed and because there is no teaching or suggestion to combine the references. Consequently, "it is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious...one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." In re Fritch, 972 F.2d 1260. 23 USPQ.2d 1780 (Fed. Cir. 1992).

In view of the foregoing, it is submitted that independent claims 1, 11, 21, 28, and 31 are allowable over the cited references. Because the secondary references stand or fall with the primary references, the dependent claims are allowable because they are dependent upon the allowable independent claims. Accordingly, Applicant respectfully requests reconsideration and passage to issue of claims 1-31 as now presented.

Applicants' attorney believes that this Application is in condition for allowance.

Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Respectfully submitted,



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